

25 (New). A method according to claim 8, wherein the display device is a liquid crystal display device or an EL display device.

26 (New). A method according to claim 8, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

27 (New). A method according to claim 9, wherein the display device is a liquid crystal display device or an EL display device.

28 (New). A method according to claim 9, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

29 (New). A method according to claim 10, wherein the display device is a liquid crystal display device or an EL display device.

30 (New). A method according to claim 10, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

REMARKS

Applicants will address each of the Examiner's objections and rejections in the order in which they appear in the Office Action

Drawings

In the Office Action, the Examiner objects to the drawings and is requiring that Figs. 2 and 3 be designated as -- Prior Art -- . Applicants have amended both Figs. 2 and 3 to recite Prior Art. Applicants are also submitting herewith corrected formal drawings to overcome any informalities in the drawings as filed. No new matter has been added. Accordingly, it is requested that these formal drawings be entered and allowed in this application.

Title

The Examiner also objects to the title of the invention as not being descriptive. Applicants respectfully disagree. The present invention as claimed is directed to a method of fabricating a display device. Hence, the title is descriptive, and it is respectfully requested that this objection be withdrawn.

Claim Rejections - 35 USC §§102, 103

The Examiner also rejects Claims 1 and 5-7 under 35 USC §102(b) as being anticipated by Chen. The Examiner further rejects Claim 2 under 35 USC §103 as being unpatentable over Chen “as applied to claims 1 and 3-7¹ above, and further in view of the following reason.” These rejections are respectfully traversed.

The present invention is directed to a method of fabricating a display device. As recited in the amended independent claims, the method comprises at least the following steps of: forming a semiconductor film over a substrate; forming a gate insulating film on the semiconductor film; forming a gate wiring on the gate insulating film; forming a first leveling film over the gate wiring;

¹ Applicants note that the “above” §102 rejection is only of claims 1 and 5-7, not 3-7.

forming a second leveling film on the first leveling film; and forming a pixel electrode on the second leveling film, wherein the thickness of the first leveling film is thinner than that of the second leveling film. As explained at page 6, ln. 4 to page 7, ln. 8 of the present application, the thickness of the two leveling layers, and in particular having the first leveling film thinner than the second leveling film, is an important factor in forming the display device of the present invention. This is especially true for forming a level surface of the pixel electrode on the second leveling film, as recited in the claims.

Chen does not disclose the steps of the claimed method. For example, Chen does not disclose a method of fabricating a display device by forming a thin film transistor and a pixel electrode, with a first leveling film thinner than a second leveling film, and the pixel electrode on the second leveling film, as recited in the amended claims. Hence, the claims are not disclosed by the cited reference, and the rejection thereover should be withdrawn.

New Claims

Applicants are also adding new Claims 8-30 herewith. These claims are also not disclosed by Chen for substantially the same reasons discussed above.

Fee for New Claims

The fee for new claims has been calculated as shown below.

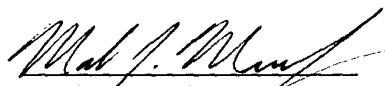
	Claims Remaining After Amendment		Highest Number Previously Paid For	Present Extra	Rate	Fee
Total	30	-	20	10	(small entity) x 9 (others) x 18	\$180.00
Independent	10	-	7	3	(small entity) x 42 (others) x 84	\$252.00
Multiple Dependent (First Presentation)					(small entity) + 140 (others) + 280	\$0
TOTAL ADDITIONAL FEES						\$ 432.00

Applicants are enclosing a check herewith for \$432.00 for the new claims. If any fee is due for this amendment, please charge our deposit account 50/1039.

An IDS and check are also enclosed herewith.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,



Mark J. Murphy
Registration No. 34,225

COOK, ALEX, McFARRON, MANZO,
CUMMINGS & MEHLER, Ltd.
200 West Adams Street, Suite 2850
Chicago, Illinois 60606
(312) 236-8500

Marked up copy of the amendments made herein:

IN THE DRAWINGS:

Please amend the drawings as shown in the attached figures in red.

IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) A method of fabricating a display device comprising the steps of:

forming a semiconductor film over a substrate;

forming a gate insulating film on the semiconductor film;

forming a gate wiring on the gate insulating film;

forming a first leveling film over the gate wiring;

forming a second leveling film on the first leveling film; and

forming a pixel electrode on the second leveling film,

wherein the thickness of [a] the first [levelling] leveling film [formed above a wiring]

is thinner than that of [a] the second [levelling] leveling film [formed on the first levelling film].

2. (Amended) A method of fabricating a display device comprising the steps of:

forming a semiconductor film over a substrate;

forming a gate insulating film on the semiconductor film;

forming a gate wiring on the gate insulating film;

forming a first leveling film over the gate wiring;

forming a second leveling film on the first leveling film; and

forming a pixel electrode on the second leveling film,,
wherein the thickness of [a] the first [levelling] leveling film [formed above a wiring]
is thinner than that of [a] the second [levelling] leveling film [formed on the first levelling film], and
wherein the thickness of the first [levelling] leveling film is 0.1 μm or more and less
than 1.5 μm .

3. (Amended) A method of fabricating a display device comprising the steps of:

forming a semiconductor film over a substrate;
forming a gate insulating film on the semiconductor film;
forming a gate wiring on the gate insulating film;
forming a first leveling film over the gate wiring;
forming a second leveling film on the first leveling film; and
forming a pixel electrode on the second leveling film,
wherein the thickness of [a] the first [levelling] leveling film [formed above a wiring]
is thinner than that of [a] the second [levelling] leveling film [formed on the first levelling film], and
wherein the thickness of the second [levelling] leveling film is from 0.1 μm to 2.9 μm
inclusive.

4. (Amended) A method of fabricating a display device comprising the steps of:

forming a semiconductor film over a substrate;
forming a gate insulating film on the semiconductor film;
forming a gate wiring on the gate insulating film;

forming a first leveling film over the gate wiring;
forming a second leveling film on the first leveling film; and
forming a pixel electrode on the second leveling film,
wherein the thickness of [a] the first [levelling] leveling film [formed above a wiring]
is thinner than that of [a] the second [levelling] leveling film [formed on the first levelling film], and
wherein the total thickness of the first [levelling] leveling film and the second
[levelling] leveling film is from 0.2 μm to 3.0 μm inclusive.

5. (Amended) A method of fabricating a display device comprising the steps of:

forming a semiconductor film over a substrate;
forming a gate insulating film on the semiconductor film;
forming a gate wiring on the gate insulating film;
forming a first leveling film over the gate wiring;
forming a second leveling film on the first leveling film; and
forming a pixel electrode on the second leveling film,
wherein the thickness of [a] the first [levelling] leveling film [formed above a wiring]
is thinner than that of [a] the second [levelling] leveling film [formed on the first levelling film], and
wherein the first [levelling] leveling film and the second [levelling] leveling film are
insulating films formed by spin coating.

6. (Amended) A method of fabricating a display device comprising the steps of:

forming a semiconductor film over a substrate;

forming a gate insulating film on the semiconductor film;
forming a gate wiring on the gate insulating film;
forming a first leveling film over the gate wiring;
forming a second leveling film on the first leveling film; and
forming a pixel electrode on the second leveling film,
wherein the thickness of [a] the first [levelling] leveling film [formed above a wiring]
is thinner than that of [a] the second [levelling] leveling film [formed on the first levelling film], and
wherein each of the first [levelling] leveling film and the second [levelling] leveling film
[are made of any] comprises at least one of a polyimide resin, an acrylic resin, a resin containing a
siloxane structure, and an inorganic SOG material.

7. (Amended) A method of fabricating a display device comprising the steps of:
forming a semiconductor film over a substrate;
forming a gate insulating film on the semiconductor film;
forming a gate wiring on the gate insulating film;
forming a first leveling film over the gate wiring;
forming a second leveling film on the first leveling film; and
forming a pixel electrode on the second leveling film,
wherein the thickness of [a] the first [levelling] leveling film [formed above a wiring]
is thinner than that of [a] the second [levelling] leveling film [formed on the first levelling film], and
wherein the first [levelling] leveling film and the second [levelling] leveling film [are
made of] comprise the same material.

Please add the following new claims:

8 (New). A method of fabricating a display device comprising the steps of:

- forming a semiconductor film over a substrate;
- forming a gate insulating film on the semiconductor film;
- forming a gate wiring on the gate insulating film;
- forming a first leveling film comprising resin over the gate wiring;
- forming a second leveling film comprising resin on the first leveling film; and
- forming a pixel electrode on the second leveling film,

wherein the thickness of the first leveling film is thinner than that of the second leveling film.

9 (New). A method of fabricating a display device comprising the steps of:

- forming a semiconductor film over a substrate;
- forming a gate insulating film on the semiconductor film;
- forming a gate wiring in the gate insulating film;
- forming a insulating film comprising an inorganic material over the gate insulating film;
- forming a first leveling film over the insulating film;
- forming a second leveling film on the first leveling film; and
- forming a pixel electrode on the second leveling film,

wherein the thickness of the first leveling film is thinner than that of the second leveling film.

10 (New). A method of fabricating a display device comprising the steps of:

- forming a semiconductor film over a substrate;
- forming a gate insulating film on the semiconductor film;
- forming a gate wiring on the gate insulating film;
- applying a first layer comprising resin by spin coating;
- baking the first layer to form a first leveling film;
- applying a second layer comprising resin by spin coating;
- baking the first layer to form a first leveling film; and
- forming a pixel electrode on the second leveling film,

wherein the thickness of the first leveling film is thinner than that of the second leveling film.

11 (New). A method according to claim 1, wherein the display device a liquid crystal display device or an EL display device.

12 (New). A method according to claim 1, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

13 (New). A method according to claim 2, wherein the display device a liquid crystal display device or an EL display device.

14 (New). A method according to claim 2, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

15 (New). A method according to claim 3, wherein the display device a liquid crystal display device or an EL display device.

16 (New). A method according to claim 3, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

17 (New). A method according to claim 4, wherein the display device a liquid crystal display device or an EL display device.

18 (New). A method according to claim 4, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

19 (New). A method according to claim 5, wherein the display device a liquid crystal display device or an EL display device.

20 (New). A method according to claim 5, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

21 (New). A method according to claim 6, wherein the display device a liquid crystal display device or an EL display device.

22 (New). A method according to claim 6, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

23 (New). A method according to claim 7, wherein the display device a liquid crystal display device or an EL display device.

24 (New). A method according to claim 7, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

25 (New). A method according to claim 8, wherein the display device a liquid crystal display device or an EL display device.

26 (New). A method according to claim 8, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

27 (New). A method according to claim 9, wherein the display device a liquid crystal display device or an EL display device.

28 (New). A method according to claim 9, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.

29 (New). A method according to claim 10, wherein the display device a liquid crystal display device or an EL display device.

30 (New). A method according to claim 10, wherein the display device is used in one selected from the group consisting of a portable phone, a video camera, and a computer, a projector.